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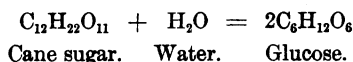
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The glucose group of sugars is represented chiefly by two substances whose names mean the right-handed and left-handed sugars, because, though these sugars are otherwise identical in composition; when a ray of polarized light is passed through their water solutions dextrose rotates the ray to the right and lævulose to the left. Grape-sugar is found abundantly in the grape, and is the sugar so often found in crystals in raisins. Fruit-sugar, as its name implies, is abundant in most fruits. Glucose is used somewhat loosely to mean either grape-sugar, or a mixture of grape- and fruit-sugar. Commercial glucose is obtained from starch by treating it with acids.

Cane-sugar may also be changed into a mixture of dextrose and lævulose by the action of acids in the presence of moisture and heat, and is then called invert sugar. When in making candy we add vinegar or cream of tartar to prevent the candy from crystallizing we are inverting a portion of the cane-sugar, or changing it to a glucose sugar. We might express the change in this way:



(To be continued.)

SOME COMMON POINTS OF WEAKNESS IN HOSPITAL CONSTRUCTION *

By ANNIE W. GOODRICH

Superintendent of the Training-School, New York Hospital

IF it be true that, despite the most careful revision of plans by Directing Boards, Medical Boards, and officials, a building is rarely erected that does not immediately upon occupancy show most incomprehensibly glaring defects, and that limited funds not infrequently necessitate arrangements which it is perfectly understood will have to be replaced in the near future at double the cost, it is also true that many of our recent buildings, richly endowed or otherwise, present to the critical eye of the practical worker a similarity of defects which would be avoidable without an increase of the initial expense, and an elimination of which would greatly facilitate the economical running of the most expensive plants which the public are called upon to maintain. Time and the immensity of the subject forbid an attempt to compare the

* Read at the tenth annual meeting of the American Society of Superintendents of Training-Schools for Nurses, Pittsburg, October 7, 8, 9, 1903.

advantages and disadvantages of the different arrangements of even those hospitals which we have been able to inspect, interesting as such a discussion would be. Neither do I propose to more than touch upon the major essentials, site, architecture, etc.

As continual growth is the history of every successful hospital, forms of architecture which will not lend themselves to extension without excessive cost would seem to us defective. As the most perfectly constructed plant would be one that with the smallest possible force would minister most effectively to the needs of the patient, so exteriors which do not allow of balconies or roof gardens, pavilions not connecting except by stairs or uncovered alleys, with long intervening corridors, and kitchens and laundries not communicating with other departments by dumb waiters or elevators, are certainly open to criticism.

Concerning ventilation and plumbing we have little to offer, but we would call attention in passing to a few points.

A plan of ventilation much in vogue is the throwing in of fresh hot air from above by fans, the outlet for impure air being from below; but a deposit of soot from the ceiling downward, and a draught necessitating a screen around each bed, makes one doubt the perfection of this system. Neither have we ever seen it prove an adequate means of heating, unless with the assistance of steam.

The necessity for the laying of steam-pipes and of having all pipes easily accessible would hardly seem to require mention. But in view of the fact that in a very recent building a very large number of pipes would have been enclosed in plaster but for the timely interference of an official not actively engaged in hospital work, and that in another hospital steam-pipes had not been carried even to the operating-room, it is proper to indicate the occurrence of such errors.

Windows placed at such a height that a patient sitting, or lying in bed, is unable to see out is an unnecessary deprivation to them of what would be a great source of diversion. As a prevention of accidents or suicides high windows are useless. Ornamental but secure gratings would not only serve the purpose far better, but are absolutely necessary in every window, high or low.

A satisfactory flooring that is inexpensive has yet to be found. Terazzo, which cracks; cement and similar forms of flooring, which are ugly and always unclean in appearance; cheaper woods, which hardly seem sanitary and have a tendency to warp and stain, are the floors most frequently used. Speaking from the standpoint of practical experience, we firmly believe that tiling, marble, mosaic, or the very expensive wooden floors, great as is the initial cost, are sufficiently satisfactory and durable to be really economical in the end.

Methods of lighting and of cleansing operating-rooms are to our minds still unsolved problems. In some hospitals abroad, we understand that after every operation, or at the end of each day, the rooms are closed and subjected to live steam. This would seem to be a thorough way of treating rooms used for septic cases. Too many of our operating-rooms do not even boast of a drain which will allow of their being flushed with water or disinfectants. Proper and convenient adjacent rooms for the attending staff, house staff, the preparation of dressings, and closets for supplies, are the exception, not the rule.

Wards in which the accessory departments, such as dining-rooms, lavatories, and pantries, are not immediately adjacent on account of intervening halls, or that are limited in size, or where rooms for convalescent patients, steam disinfecting, and drying closets are omitted, are poorly planned. But the greatest general defect is the inadequate apparatus for the cleansing and disinfecting of ward utensils and linen.

As an illustration let us speak of typhoid. A query as to the theory taught in our training-schools concerning the disinfection of all articles used in connection with typhoid patients elicits a reply which scarcely varies by a word. An answer to the query as to the carrying out of such theory would scarcely differ but for a not unnatural dislike to acknowledge how inadequate are the means. A typhoid is only one, and perhaps the least objectionable, of the communicable diseases which are to be found in our general wards, we cannot advocate too strongly methods which will perfectly protect the patients who are under our care. Elaborate bathtubs, closets, and washstands are always found, while slop-sinks are frequently and disinfecting tanks almost invariably omitted.

The disinfectant which was satisfactory yesterday is useless to-day, but on the efficacy of sterilization we believe all authorities are agreed. Therefore, in our lavatories, a very simple and a very possible way, and also a method which would be an economy in both time and material, would be to carry live-steam pipes into our disinfecting tanks, so that all utensils used in connection with the patient could be sterilized, as personally we believe they should be whenever used. As blood-stains and excreta are not indelible if not allowed to dry before boiling, the advantage of the immediate sterilization of the linen would be twofold: the removal of all source of danger and the prevention of discoloration.

I do not recall ever having seen a satisfactory arrangement for storing and preparing the ice for external use. Certainly the dining-room or pantry table is not the place to refill an ice-cap that has just been removed from the patient.

Another not unimportant oversight, when so many conditions are treated by baths, is the failure to arrange for emptying and filling por-

table tubs. A convenient and cleanly arrangement is a marble slab in the floor of the lavatory or some adjoining room with a depression in the centre converging towards the drain and faucets sufficiently high to allow of tubs being placed under them.

How rarely are closets for patients' clothing built in close proximity to the wards, with proper means for ventilation and sufficiently large not to ruin the patients' clothing. Almost invariably these closets are small, are sometimes placed in the basement, and not infrequently even are omitted.

While a few recently built hospitals have arranged for a dining-room and pantry in connection with each ward, very many still omit the former and set aside a space for the latter which is much too small to allow of proper china closets, steam-tables, refrigerator, and sink. We think too it is equally as necessary for the sake of perfect cleanliness that here again arrangement should be made for the boiling of all utensils. It would certainly do away with the necessity of isolating certain patients' dishes, a precaution which we often feel upon thorough inspection to be of little real value.

The sins of omission in the children's department are numerous. A hospital that pretends to care for children, and then provides neither sun-parlor, roof-garden, nor recreation-room, or that desires a good service and then fails to provide observation-wards and temporary isolation-rooms to prevent the continual closing of the general wards because of contagion, is at least short-sighted. But the omission to provide a room where the surgical cases can be treated individually is almost inhumane, and would never be repeated by those responsible for the omission if they could once see the almost frenzied condition to which the little sufferers awaiting their turn are reduced by the screams of the child under treatment.

The advantage of arrangements in the basement, or at least outside the ward, for the removal of clothing and bathing of patients on admission are too obvious for their omission to be excusable. Yet absent they are. We again call attention to the disposition to omit all sinks and other apparatus for cleansing and disinfecting, which are even more necessary here than in the wards.

A private patients' building in connection with any other department, such as the rooms for the staff or Nurses' Home, is a great and unfortunately frequent mistake. The most common cause of complaint on the part of the patient is that of excessive noise. Elevators should be noiseless, but they are always noisy. Halls should be kept as quiet as possible, but the omission of reception-rooms for friends of the patients, working departments for the nurses, and, above all, a room for the special

nurses on duty who are obliged to absent themselves temporarily from the patients' rooms, make them centres of much disturbance.

The advantage of lavatories for working purposes being separate from those for the use of the patients is quite obvious, but such an arrangement is rarely found. They should be placed in as inconspicuous positions as possible, but yet are not infrequently found in close proximity or directly opposite to the reception-rooms or elevator.

An important factor in the economy of labor is the placing of as many rooms on each floor as possible. A recent comparison of a certain number of rooms on one floor of one hospital with the same number of rooms on three different floors of another showed the necessity of trebling the nursing force in the latter case.

Such perfect plans for isolation wards have been conceived and carried out that a building excellently arranged for the isolation of two or more diseases, yet providing only one dining-room and pantry for all, seems inconceivable. We could, however, mention three hospitals in which this has occurred. Stress should be laid on the importance of having each ward and its accessory departments absolutely separate, with intervening passages and double doors and apparatus for steam disinfection on the premises. The diet kitchens have done such good work that their presence is generally assured, but the economical advantage of their being connected with the main kitchen is perhaps not always appreciated.

We could go on indefinitely mentioning and enlarging upon defects, but in view of the fact that long and able articles on all the different points of construction have apparently failed to prevent these defects we do not believe that pages of suggestions and volumes of plans would alone solve the problem. We do believe, and this article will have failed of its main object if we cannot induce you to believe with us, that wherever the responsibility may have lain in the past, we will have to assume a large share of it now. It is ours by right of experience. Starting from the lowest rung of the ladder, our hands have touched every department. We know, or should know, better than anyone else the needs of the patient from the standpoint of every condition and the standpoint of every class.

In the vast amount of matter with which the architect has to deal, details which to us are so important are to him of minor consideration. More than once when we have asked how such mistakes could have been made the answer has been, "Our opinion was never asked; we scarcely knew a building was in progress." We do not think the busiest superintendent should ever make this excuse. Hospitals did not call for training-schools; States are not calling for legislation. Our Patron Saint has

set us an example. In notes from a lecture on hospital construction given before the British Medical Association in 1869 by Douglas Galton, F.R.S., it is interesting to read that "amongst the publications on the subject, Miss Nightingale's 'Notes on Hospitals,' etc., may be mentioned as having contributed largely to the spread of sound principles of hospital construction in this and other countries." Our fight for recognition is a moral obligation. Of how much value to our nurses are our excellent theories if we do not see to it that proper means are provided for their execution?

From the moment that the idea of a new hospital is conceived or that extensive alterations are talked of, from that moment the superintendent of the training-school should commence to acquaint herself with every detail upon which she could possibly be called for advice. However great the demand upon her time may be, she must be awake to the fact that the best basis for her work will be the well-planned institution. Let her insist upon seeing the plans and upon getting in touch with those members of the board who are most directly interested in the building in the course of erection. She should visit as many institutions as possible with a view to widening her horizon.

Superintendents of training-schools are not architects, but as a condition of their being in the positions at all, good executives they must be, and as such they should use all available material to the best advantage. On every staff and in every training-school are men and women who are ingenious in just those details which would be important in certain points of construction. Let the training-school superintendent consult with them. Plans take weeks; construction takes months. She will have time, therefore, to anticipate the work of the architect and to follow step by step the course of construction.

Our predecessors fought for the establishment of the training-schools with not less of opposition than must be met by every new and untried scheme. If, in battling for legislation and establishing superintendents' courses and preliminary courses, we of to-day have been so busy that we have overlooked the tremendously important part the institution plays in the education of the nurses, or if in using the institution for the individual, we have failed to use the individual for the institution, we can but hope that our successors entering the field, equipped as we only wish we might have been, will be able to obtain recognition as authorities in hospital construction. Personally we have seen such a disposition on the part of the men and women interested in our institutions to listen to practical suggestions for their improvement, in their anxiety to have them minister perfectly to the needs of the sick while serving as educational centres, that we think their battle will be easy and that their victory is assured.

The difficulty of obtaining any compiled information on hospital construction suggests the value of a book containing the plans of the different hospitals in this country. Would it be possible for every member of this association to obtain the plans of the institution with which she is connected and to make notes on those arrangements which are particularly satisfactory or defective? A volume compiled in this manner would be of value, not only in the planning of new institutions, but as a reference-book for the different schools that are giving instruction on the subject in their preliminary courses.

THE DUTY OF THIS SOCIETY IN PUBLIC WORK *

By L. L. DOCK

A LONG paper on this subject is, naturally, not to be expected, but a few suggestions arising from the intimate following of the society's affairs during a period of seven-years' secretaryship may, perhaps, be useful, especially to those members who, from the compulsory absorption of their own urgently pressing duties, have not given special time or attention to the question of the character and efficiency of the society as a whole.

The question which instantly arises when one considers the society as an organization, and which arises constantly before the vision of those who conduct its affairs, is, "How to make the society more effective." If we compare in a historically impersonal manner the objects of the society, the women of whom it is composed, the training-schools which it represents, and the enormous *latent* power and influence which it possesses in these members, with the actual influence exerted and made manifest, we must confess that the society is not effective—at least, vastly less effective than might be expected of it. True, it has done some sporadic pieces of good work: it has planted and cultivated the Associated Alumnae, established the Teachers' Course, and assists in various good enterprises as they come along, such as congresses, etc. But to what extent is the society an influence? To what extent does it affect the public? How much does it actually guide nursing education? What weight has it with hospital managers and staffs? What amount of force does it bring to bear on its own members in questions of education, ethics, etc.?

* Read at the tenth annual meeting of the American Society of Superintendents of Training-Schools for Nurses, held in Pittsburg, Pa., October 7, 8, 9, 1903.